

CLASSIC CHOICE

Lotus Europa low down

The Lotus Europa is an experience to drive but buying one holds many hidden dangers. Jonathan Wood explains.

HAD it been left to Colin Chapman, the Lotus Europa would probably have been called the Elfin but Graham Arnold, at that time Sales Director of Lotus Cars, tactfully pointed out that the projected name meant *finish* in Italian — hardly desirable in an export-orientated model. He came up with the name Concorde but when cancellation of the supersonic airliner project loomed, Arnold then suggested Europa, a name that perfectly mirrored the model's Anglo-French antecedence a name overwhelmingly confirmed by an employees' poll.

The Europa, which carried the Lotus model number 46, was a logical extension of current mid-engined racing car design in which Lotus had played such a significant role. It was in 1965 that Chapman asked designer Ian Jones to set down a two-seater mid-engined sports coupé employing the light, aluminium wet-liner Renault 16 engine in 70bhp plus form, as Jones recalls "in the old Elite concept of light weight and outstanding aerodynamics".

In December 1966 the results of these labours were revealed. The Europa, initially available for export only, was built up around a deep steel backbone frame but in an attempt to make the structure as rigid as possible, the chassis was fused into the glass fibre body. The 78bhp 1470cc Renault 16 engine and its attendant gearbox was mounted directly behind the passenger compartment with rear wheel drive conveyed via the box located at the rear of the car. Suspension, naturally, was independent all round. The Europa's bodywork reflected the unconventional approach, the rearward prospect being dominated by two large fins which, when coupled with a back window which resembled an enlarged letter box, considerably cut down rearward vision. A sophisticated ventilation system resulted in the windows being fixed.

However, some of the shortcomings of the original concept (S1) soon became apparent, for in 1967 an improved version, the S2 (Lotus 54) was introduced. The main differences were the introduction of a detachable chassis and opening door windows. The original interior had been somewhat spartan and a new dashboard with wooden fascia was one of the more obvious improvements. The Europa weighed 13.1cwt., had a top speed of 109mph and cost £1667. By 1969 the car was on sale in Britain and the following year an "Emission-controlled" Europa with 1565cc engine and designed for export to the USA (Lotus 65) was introduced. The model received a major shot in the arm in 1971 when the Renault engine was discarded in favour of the 105bhp 1558cc Lotus-Ford-based twin overhead

camshaft unit, easily discernible by its cutdown rear fins and Lotus "Spider" wheels. The final version, the Europa Special of 1972, was further boosted by a 126bhp Big Valve twin cam engine, usually with a five-speed gearbox. When production ceased in 1975, the model's top speed had risen to about 120mph but the price had spiralled to around £3000 with extras.

But what are the problems associated with buying one of these controversial sports cars? To find out I went to talk to Mike Walters, Field Service Engineer at Lotus Cars 1972-78, who now lectures at Club Lotus seminars on all the company's models.

Body and chassis

Let's take the S1 first. As already mentioned, this has a combined body and chassis which was fine in theory except when the frame suffered damage; surgery was a tricky and expensive business. Now, with the added perils of rust, it would be advisable to give any S1 a wide berth. The trouble with Lotus is that if the frame suffers any damage, the entire chassis *must* be replaced. So, moving on to the S2 and twin cam cars, if you

Right, the twin-cam Europa, identified by alloy wheels and cut down rear fins.



Above, the Renault-engined S2. Note the original rear finning and luggage space. Left, left-hand drive Europa with limited rear vision all too obvious.

encounter an example requiring 'a bit of chassis work', avoid — unless the asking price reflects it. For it will cost at least £1000 to fit a new frame. So when you're inspecting the chassis, pay particular attention to distortion and rippling around the front suspension pick up points. Inspect the front face of the chassis for rusting and accident damage while the backward edge of this forward face also corrodes but it's virtually impossible to detect with the body in place. The rear of the chassis tends to be fairly rust free as it benefits from engine and gearbox lubricant, this particularly applying to the twin cam variants! It's also worth noting that the Renault-engined cars have more body mountings than their later counterparts, 14, as opposed to eight. Before we



leave the chassis, be particularly suspicious of a vehicle that's been involved in a fire, however small; it doesn't take much to distort the chassis.

The glass fibre body is a major plus point in that it doesn't rust but it does have other problems. Look for star cracks, particularly at the tops of the front and rear wings, caused by undersides being bombarded with stones and road grit. The later cars don't tend to suffer so much as the wheel arches were coated with an underbody sealing compound. More straightforward are gel cracks which are found on the thinner panel sections, namely in the centre of the doors, around the handles and in the rear tail fins. Impact damage is easier to see but is potentially more dangerous. Check around the front of the car for signs of repairs and remember that the glass fibre is likely to be damaged about a hand's length further than the extremity of a crack.

Next there are the doors. When you open a

Europa door to check for play the chances are that it will move about one to one and a half inches; it shouldn't. The trouble is that the doors swing on a pivot pin but the bobbins in the bodywork can break up and abrasive washers on which the doors turn tend to collapse. The result is plenty of movement in the doors and rebuilding the hinges is a major exercise.

Also beware problems with the windscreen. The earlier cars, that is to say the S1s and 2s, had a screen secured by a conventional rubber insert. Later examples employed a direct glaze procedure to hold the screen in place but the water gets in! This will be revealed by damp carpets and a musty smell or a 'milky' screen. The trouble is that it's a terrible job to fit a replacement screen as the chrome finisher surround has to be sacrificed and new ones are almost impossible to find. . . . And talking of leaking, the non-opening windows also tend to let the water in.

Suspension, steering, brakes

Unequal length purpose-built wishbones are used at the front of the Europa and in layout are similar to those of the Elan. Vertical link, stub axle and trunnions are Triumph and the arrangement is fairly viceless, though the lower trunnion mounting bolts can slacken and elongate the holes in the wishbones. Fortunately, no special tools are required for this suspension work and the only other items that may require attention are the shock absorbers. As with most Lotus models they have to work fairly hard for their living and will probably require replacement at about 20,000-mile intervals (they also start to leak around this time anyway). In profile the Europa should have a slightly nose-up attitude, so a tired front end will be readily apparent from a suitable distance. Before leaving this area it's worth mentioning that the anti-roll bar, due to its proximity to the road, can get knocked off or damaged. At the rear of the car make a point of checking the shock absorbers for leaks and examine the radius arms which are box sections and tend to rust through, adjacent to their Metalastik mountings.

The Europa's brakes are front discs and rear drums with servo assistance an option on the Renault-engineered cars, and a standard fitment on the twin cam versions. Although the front discs and calipers are Triumph, the pads are peculiar to the marque, which is worth remembering. The rear brakes are Ford based and the later twin cams used a self-adjusting handbrake that didn't! The rear suspension on the twin cams is rather prone to vibration and this was overcome, to a great degree, by balancing not only the wheels and tyres, but also the brake drums. You can identify these by a machined face and a blob of green paint on their periphery. Complete your inspection of the rear suspension by checking the

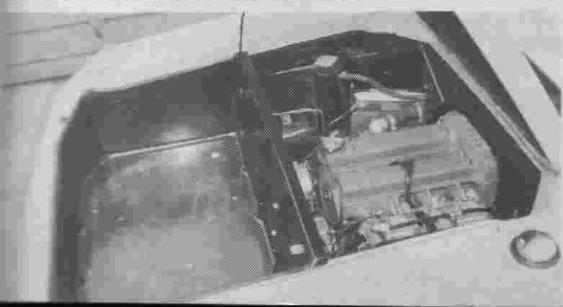
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Below, interior of the twin-cam Europa, a great improvement on the original S1 series.



Below, the twin-cam engine in situ with distinctive alternator drive from the inlet camshaft.



Below, at the front is the radiator with electric fan and similarly equipped luggage compartment!



Rear of twin-cam car with low mounted gear selection lever.



Closeup of under bonnet view of Renault-engineered Europa with alternative gear operating mechanism.

Lotus Europa

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state of the rubber bushes in the tie bars which run from the rear hub carriers to the gearbox.

The Alford and Alder rack and pinion steering is of Triumph origin and you shouldn't experience any difficulties with it, but carry out the usual checks to the mounting bolts and the condition of the rubber gaiters. Almost all the models used a fabricated joint between the rack and steering column but the last of the twin cams used a universal knuckle joint that can seize. If the steering of the example you're testing seems unnaturally stiff, this may be the reason.

Engine, transmission

Both engines — Renault and Ford — are reliable but inevitably suffer from individual peccadillos. The Renault is an exceptionally sturdy power unit and about its only shortcoming is that of limited power. A difficulty that early owners experienced was with the twin-choke Solex carburettor which tended to produce erratic idling and was an expensive unit in its own right. Consequently some cars were fitted with a twin-choke Weber from the Ford Cortina 1600 which had the advantage of requiring practically no modifications. An acceptable oil pressure figure for this engine is 30psi (hot) at 2000rpm.

The Europa's twin overhead camshaft engine, which is also common to the Elan is, likewise, a generally well-behaved unit though perhaps its most obvious shortcoming is a reluctance to remain oil tight. Lubricant tends to leak from a variety of points: from the cam box gaskets and the oil filler cap, while the rubber drain pipe between the head and sump can fracture. The sump gasket is another potentially leaky area. Water pump bearings tend to have a limited life when fitted to the engines in the Elan or Cortina Lotus but the Europa version has about double the life of its conventionally positioned counterparts. This is because on the Europa the drive belt drives only the water pump without the additional demands of an alternator. However, this particu-

lar unit is driven off the end of the inlet camshaft which is yet another area for oil leaks. While on the subject of lubrication note that the engine is prone to valve guide wear, so keep an eye open for clouds of blue smoke belching from the exhaust pipe, particularly after a spell on the run.

Incidentally, if you examine the engine while it's running, don't be alarmed if the carburettors appear to be wobbling up and down. This is quite normal. But if they're too loose, the engine will suck in air, weaken the mixture and damage the valves. If some misguided individual has tightened the carbs solid, the resultant vibration can affect the petrol level and thus the engine's performance. The Dellorto carbs fitted to many twin cams have the advantage of staying in tune longer than the alternative Webers', so the servicing intervals can consequently be extended. Stromberg carburettors tended to be fitted to Federal Emission versions which rather took the edge off the engine's performance.

Timing chain wear is the twin cam engine's other principal bugbear. Keep an ear open for a metallic rattle at around 2000rpm. To check the state of the chain, seek out its adjuster at the front offside of the engine. If there's plenty of thread proud of the Nyloc locking nut (about half an inch should be revealed when the chain is new), then you know there's lots of chain life left but if there's little or no thread to be seen, then the maximum adjustment has been taken up and you're going to need a new chain. And fitting one virtually means dismantling the whole engine. Oil pressure should be 35 to 40psi, or less, on idling. This isn't uncommon and is caused by worn camshaft bearings.

Both engines employed the R16 gearbox which is also very reliable. Far more trouble is likely to be experienced with the gear linkage and if the car jumps out of gear, or baulks, it's far more likely to be an external, rather than an internal problem. A variety of gear linkages were tried, which employed rose joints and mechanical pivot points but the distance of the lever from the gearbox was always a limiting factor. Finally, a simpler arrangement was standardized which hooked up to the rear of the box but this was unfortunately affixed at kerb height and can be damaged very easily, resulting in a distorted linkage and, all too often, a cracked gearbox casing. Be prepared for a heavy clutch pedal caused by a rusty and lengthy cable.

The drive shafts, which not only take rotational but also side loading should have their universal

joints lubricated at least every 5000 miles. Keep an ear open for snatches or clicks, if you have an opportunity to drive the car, as these indicate wear in the joints (there are two, one each end of the shaft). Jacking up the rear wheels may reveal excessive lateral movement. This must be rectified (by shimming) otherwise the differential unit will be damaged. Also keep an ear open for wheel bearing rumble. The chances are that the nearside rear will be the first to protest, the result of water ingress.

Interior

As already noted, the S1 Europa has non-opening windows though all subsequent versions employed electrically operated ones. Fortunately the Delco motors are reliable but the curved profile of the windows can result in the glass moving rather sluggishly. Initially the Europa's seats were non-adjustable but the arrival of the S2 saw the introduction of fore and aft adjustment though rake was constant.

The Europa's ventilation system is a study in itself. The minuscule luggage compartment acted as a pressurised plenum chamber, charged by an electrically operated cooling fan. Fresh air was thus conveyed via dashboard-mounted eyeball ventilators thus, in theory, rendering opening windows unnecessary. For the system to work effectively the 'bonnet' had to be carefully sealed and if the rubber surround wasn't doing its job properly then the system wouldn't work and the contents of the compartment would get damaged by rainwater. The radiator was mounted forward of the compartment and also employed an electric cooling fan, thermostatically controlled by the engine. While on the subject of hot air it should be noted that its virtually impossible to turn off the heater in a twin cam which is fine in the winter months though not so clever in the warmer season.

On early cars, the rear view mirror used to be glued to the screen itself and could, if knocked, crack the glass to which it was attached so check closely. Another of the Europa's less endearing features is its single windscreen wiper. This tended to produce a blind spot of unwiped glass to the right of the sweep (in a rhd car), which might have been bearable were it not for the fact that rearward vision is also terrible.

Spares and clubs

Most body and mechanical spares are available from Lotus Cars via their dealers while at least two twin cam specialists are Vegantune of Cradge Bank, Spalding, Lincolnshire and Ian Walker of Shilton Trading Estate, Leighton Buzzard, Beds. Parts for the Renault engine and gearbox are often more readily available through that marque's retail channels. The principal club for the Europa in Britain is Club Lotus and, technical seminars are held for club members which have proved very popular. Full details can be obtained from Margaret Arnold at 22a, High Street, Watton, Thetford, Norfolk while the Lotus Drivers Club (Jenny Barton, 2, Charlbury Mews, Sydenham, Leamington Spa, Warks), also cater for these distinctive cars.

Best buy and how much

The Europa gradually improved as it progressed, so it's fair to say that the later the car the better. Perhaps the most desirable variant is the JPS version finished in black with gold lining to echo the famous John Player cigarette packet. Then sponsors of Team Lotus. (they also benefited from colour impregnated sills rather than the paint being sprayed on, thus minimizing the danger of stone damage). There were just 100 of these out of a total Europa production of 9230. Top end prices start at the £4000/£5000 mark but you can pay as little as £300 for a very bad condition Renault-engined example.

The JPS version of the twin-cam in distinctive black and gold livery. Probably the most desirable variant.

